



Effect of Non-Ionic Micelles on Protonation Equilibria of L-Leucine and Isoleucine

M. Sudha, V. Gowri Kumari and B.B.V. Sailaja*

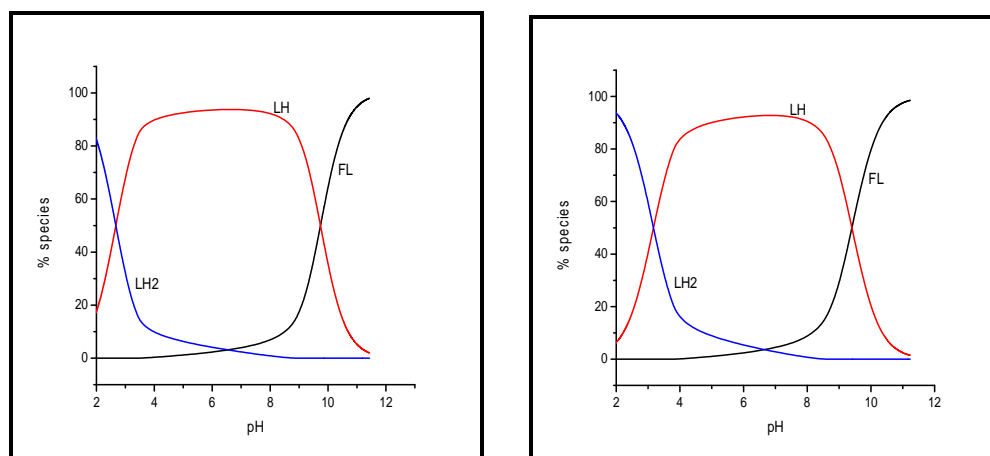
School of Chemistry, Andhra University, Visakhapatnam-530003, **INDIA**
Email: sailajabbv.chem@gmail.com

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ABSTRACT

Protonation equilibria of L-Leucine and Isoleucine have been studied in varying concentrations (0.0-2.5% v/v) of Triton X-100 (TX100) solution maintaining an ionic strength of 0.16 mol dm^{-3} at 303K using pH metric method. The protonation constants have been calculated with the computer program MINIQUAD 75 and the best fit models are arrived at based on statistical grounds employing crystallographic R factor, skewness, χ^2 and kurtosis. These protonation constants values have been found to shift in micellar media as compared to those in pure water. The differences in the values have been attributed to the solvent properties of the interfacial and bulk phases involving contribution from the micellar surface potential in the case of charged micelles. The trend of log values of step-wise protonation constants with mole fraction of the medium have been explained based on electrostatic and non-electrostatic forces operating on the protonation equilibria. Distributions of species, protonation equilibria and effect of influential parameters on the protonation constants have also been presented.

Graphical Abstract



Species distribution diagrams of (A) L-Leucine, (B) Isoleucine in 1.0% v/v TX100-water mixture.

Keywords: Protonation constants, L-Leucine, Isoleucine, Triton X-100, MINIQUAD 75.